

Specimens Prepared for Materials International Space Station Experiment

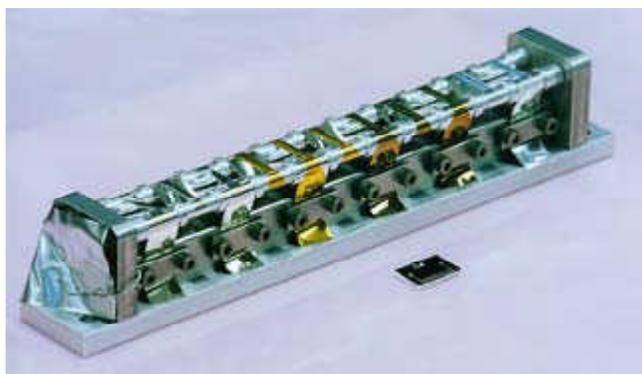
The Materials International Space Station Experiment (MISSE) is a materials flight experiment sponsored by the Materials and Manufacturing Directorate of the Air Force Research Laboratory at Wright-Patterson Air Force Base and the NASA Space Environmental Effects Program at the NASA Marshall Space Flight Center. MISSE is a cooperative effort among the Air Force, several NASA field centers, and industry. The experiment package will be placed on the exterior of the International Space Station in the summer of 2001. Approximately half of the specimens will be exposed to the space environment for 1 year, and the other half will be exposed for 3 years.

The Electro-Physics Branch at the NASA Glenn Research Center has prepared and delivered over 150 specimens to be included in MISSE. Specimens include

- Double-coated polyimide Kapton to compare mass loss from in-space atomic oxygen undercutting erosion to ground-laboratory atomic oxygen undercutting erosion for predicting in-space durability
- Silicones to study changes in surface hardness and optical properties after combined atomic oxygen--ultraviolet radiation exposure for predicting in-space durability
- Forty-one different polymers to accurately measure their atomic oxygen erosion yields
- Scattering chambers to study atomic oxygen scattering characteristics that are relevant to the degradation found in spacecraft with exterior openings
- Thin polymer film disks and tensile specimens to study the effects of radiation on their optical properties and mechanical properties
- Lightweight intercalated graphite epoxy composites to study electromagnetic interference shielding performance
- Polymer-based materials utilizing new atomic oxygen protection concepts to study their durability.



Disk specimens installed in MISSE flight hardware.



Thin polymer film tensile specimens installed in MISSE flight hardware.

For more information, visit Glenn's Electro-Physics Branch
(<http://www.grc.nasa.gov/WWW/epbranch/ephome.htm>)

Glenn contacts: Bruce A. Banks, 216-433-2308, Bruce.A.Banks@grc.nasa.gov; Kim K. de Groh, 216-433-2297, Kim.K.deGroh@grc.nasa.gov; Joyce A. Dever, 216-433-6294, Joyce.A.Dever@grc.nasa.gov; Dr. Donald A. Jaworske, 216-433-2312, Donald.A.Jaworske@grc.nasa.gov; Sharon K. Miller, 216-433-2219, Sharon.K.Miller@grc.nasa.gov; and Aaron Snyder, 216-433-5918, Aaron.Snyder@grc.nasa.gov

Dynacs Engineering Company, Inc., contact: Edward A. Sechkar, 216-433-2299, Edward.A.Sechkar@grc.nasa.gov

Authors: Bruce A. Banks, Kim K. de Groh, Joyce A. Dever, Dr. Donald A. Jaworske, Sharon K. Miller, Aaron Snyder, and Edward A. Sechkar

Headquarters program office: OSS (ATMS)

Programs/Projects: ISS